DOCUMENT RESUME

ED 133 679 CG 011 116

AUTHOR Nelson, Janice E.
TITLE The Effect of Sex and Age on Children's Choice of Peer Groups.
PUB DATE 29 Jul 75
NOTE 54p.; Master's Thesis, Western Washington State College, Bellingham; Not available in hard copy due to marginal legibility of original document.

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *Age Differences; Age Groups; *Children; *Developmental Stages; *Interaction Process Analysis; *Peer Groups; *Pictorial Stimuli; *Play; *Sex Differences; Social Development; Social Relations

ABSTRACT

Subjects were 65 six-, eight-, ten-, and twelve-year olds from after-school day care programs. The subjects were unobtrusively observed in free play situations involving peers and the duration of their interactions in six types of peer groups of varying size were recorded. Subjects were also administered a picture card test, composed of 20 sets of cards representing six different types of peer groups engaged in particular activities; they were instructed to point out the one characteristic of them and their choices were recorded. The six peer group categories were hypothesized to be stages in children's peer relations but no clear patterns or emphasis on the types of peer groups were found with age. A correlation of 81 between scores derived from direct observation and those obtained using the picture test was found, suggesting the possibility of developing the picture test for future research or other purposes in lieu of lengthy direct observation. Sex did not interact with other variables. The major trends appeared to be towards increasing size and homogeneity of age and sex in preference of peer groups with increasing age in the subject. (Author)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED133679

THE EFFECT OF SEX AND AGE ON CHILDREN'S CHOICE OF PEER GROUPS

BEST COPY AVAILABLE

HARD COPY NOT AVAILABLE

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRO-
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGIN-
ATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRE-
SENT OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY

by

Janice E. Nelson

CG 011114

THE EFFECT OF SEX AND AGE ON CHILDREN'S CHOICE OF PEER GROUPS

A Thesis Presented to
The Graduate School of
Western Washington State College

In Partial Fulfillment of
The Requirements for the Degree
of Master of Science

by
Janice E. Nelson
July 29, 1975

THE EFFECT OF SEX AND AGE ON
CHILDREN'S CHOICE OF PEER GROUPS

by

Janice E. Nelson

Accepted in Partial Completion
of the Requirements for the Degree
Master of Science

J. Alan Ross
Dean of Graduate School

Advisory Committee

B L Kirk
Chairman

Fred Grote

Wilbur K. MacKay

ACKNOWLEDGMENTS

The writer expresses her gratitude to Dr. B. L. Kintz for his continued support, encouragement, and guidance in the completion of this endeavor. Further appreciation is expressed to Mrs. Edith Nelson for her invaluable assistance in editing, organizing, and typing the material.

TABLE OF CONTENTS

INTRODUCTION..... 1

METHOD: PART I VALIDATION OF THE STAGE THEORY..... 10
Subjects..... 10
Procedure..... 12

PART II PEER RELATION PICTURE TEST..... 14
Apparatus and Materials..... 14
Procedure..... 16

RESULTS..... 19

DISCUSSION..... 32

REFERENCES..... 38

APPENDIX "A"
Category Descriptions Given to Observers..... 41

APPENDIX "B"
Sample of a Complete Set of Pictures used in Picture Test..... 42

TABLES

TABLE I Mean Ages at Testing by Group..... 11

TABLE II Activities Depicted in Picture Card Sets..... 15

TABLE III Analysis of Variance for Observation Scores.. 20

TABLE IV Analysis of Variance for Test Scores..... 21

TABLE V Within Scheffé Comparisons..... 26

TABLE VI Between Scheffé Comparisons..... 28

TABLE VII Analysis of Variance for Frequency in Categories of Test Responses by Paired Picture Card Sets.....31

FIGURES

FIGURE I	Age X Category Interaction for Observation Scores	22
FIGURE II	Age X Category Interaction for Test Scores.	23
FIGURE III	Observation and Test Score Means over Category	25

The Effect of Sex and Age on Children's Choice of Peer Groups

Janice E. Nelson

Western Washington State College

65 six, eight, ten, and twelve year olds from after-school day care programs participated in the study. The Ss were unobtrusively observed in free play situations involving peers and the duration of their interactions in six types of peer groups of varying size and makeup were recorded. Ss were also administered a picture card test, composed of 20 sets of cards representing these six different types of peer groups engaged in particular activities; they were instructed to point out the one characteristic of them and their choices were recorded. The six peer group categories were hypothesized to be stages in children's peer relations but no clear patterns or emphasis on the types of peer groups were found with age. A correlation of .81 between scores derived from direct observation and those obtained using the picture test was found, suggesting the possibility of developing the picture test for future research or other purposes in lieu of lengthy direct observation. Sex did not interact with the other variables. The major trends appeared to be towards increasing size and homogeneity of age and sex in preference of peer groups with increasing age in the S.

The Effect of Sex and Age on Children's Choice of Peer Groups

Janice E. Nelson
Western Washington State College

If, as is claimed by Piaget (1948), such important social developments as a sense of morality, the capacity for intellectual thought, and social competence are all gradually developed in a series of stages during childhood, it would seem that all facets of socialization during childhood should be investigated. In general, most research on the childhood socialization process has been concerned with the influence of the family as the primary socializing agent but recent studies on conformity demonstrate not only that peers can compensate as socializing agents for inadequate contact with parents (Harlow and Harlow, 1965) but also that even in normal nuclear families their influence gradually becomes more important during childhood, sometimes overriding the effect of family norms, reaching a peak during pre-adolescence (Costanzo and Shaw, 1966; Rosen, 1955). Moreover, peer relations are admitted to be of extreme importance in several areas; these are the child's emotional state and development, the growth of skills and knowledge, a furthering of the growth of self-control and socio-centricity, and social-role training (Mussen, Conger and Kagan, 1969), all of which are obviously related to socialization. Elkin (1960) claims that peer groups during childhood act

as one of four major agencies of socialization, the other agencies being the family, the school and the media. He suggests that the peer group has a number of functions peculiar to itself: giving experience in egalitarian types of relationships; teaching about "tahoo" subjects (e.g. sex); teaching about fashions and trends; expanding the social horizons of the child, thereby making him a more complex person; and enabling him to become more independent of parents and other authorities. The peer group is also thought to transmit norms and values through a social reinforcement mechanism and modelling.

For these reasons, it seems incongruous that peer relations in childhood have usually been only peripherally investigated to date. Peer groups have most extensively been studied in the adult context, according to Hartup (1970). Those few that deal with children, or are applicable to them, rarely investigate more than rules of group-formation (e.g. Sherif, Harvey, White, Hood and Sherif, 1961), leadership phenomena (e.g. Lippitt and White, 1947), criteria for popularity (e.g. Moreno, 1934), or particular influences of the group on conformity in certain situations (e.g. McConnell, 1963). Granted these and other studies have contributed to our understanding of the role played by peer identification and conditioning (through positive of negative acceptance) in socialization, but they are lacking at a more basic level. Hypothesizing about the influence of peer relations on certain developments must

necessarily be futile until more is understood about the exact nature of peer relations.

Most of the literature in this area is old and usually ignored but it is relevant to the present consideration because it defines types of peer relations that occur spontaneously in the normal child at certain ages and in a particular sequence. One of the earliest to recognize and list these stages was Gesell (1925). He defined the types of social behavior exhibited by the preschool child at 10 age levels. Unfortunately, the forms of relations often overlapped in age groups and were not limited to peer-oriented behavior. Parten (1932) remedied these defects by describing 4 types of preschool peer relations and defining their respective age-equivalents. Her data, although based on naturalistic observation, was shown to be highly reliable and valid statistically.

Parten's studies (1932 and 1933) were noteworthy and certainly indicative of the presence of definite stages in peer relations, yet limited in that they were based exclusively on preschool children. Subsequent studies in peer relations, however, did not seek to extend her work until Gesell and Ilg's major work (1946). The forms of peer relations in childhood and the possibility of a sequential order to them were usually ignored. Perhaps this neglect was due to a general discrediting of the naturalistic method of observation or perhaps to the opinion that the particular forms of peer groups were unimportant. There is, however, increasing

evidence that the form of peer relations and its corresponding age is particularly relevant to certain developments. Einhorn (1971), for example, has shown that moral development depends on age and the cohesiveness of the peer group. Harlow and Harlow (1965) have observed 4 stages in social interaction among primates which specifically contribute to adult sexual behavior, aggression, and the "mothering" instinct. The stages in play activities as described by Piaget (1948) moreover, are closely akin to peer relations and apparently contribute differentially to specifics such as language, social-role training, etc.

If the sequence of stages in children's peer relations and the peer relations themselves could be defined, therefore, it might be beneficial to devise a technique to measure the individual child's social status in terms of age norms since peer groups obviously contribute to the development of a variety of socialized attributes. An accurate measuring device of this kind would eliminate the need for long-term observation of the child.

Firstly, however, the stages must be defined. Apart from Parten's (1932) 4 preschool stages, which have been widely used by researchers with preschool Ss (e.g. Smith and Connolly, 1972), only one stage has specifically been experimentally studied with respect to age. This is the "clique" (Potashin, 1946) or "gang" (Withey, Foster, and Billingsley, 1960) characteristic of the 10 to 14 years age group. Three other stages between these two extremes

have, however, been suggested by Gesell and Ilg (1946) and subsequently named by Potashin (1972) and these seem to be consistent with other relevant observations (e.g. Haskett, 1971, on age compared with preference of same-sex peers). Gesell and Ilg (1946) and Gesell, Ilg, and Ames (1956) describe interpersonal behavior characteristic of children from the ages of five years through adolescence. Five and six year olds, for example, are said to play in twosomes, generally with children their own age and without drawing sexlines sharply. By late in the sixth year, children are beginning to play with others of more varied ages in poorly organized group play. By 7 or 8, neighborhood group play is participated in well but some discrimination against the opposite sex is beginning to appear. The 8 or 9 year old generally plays with "special" friends of the same age and sex in fairly organized group play. Informal clubs (of several children) often develop at this time. Between the ages of 10 and 12 the "gang" or "clique" peer group predominates, especially for boys, and fairly large peer groups are characteristic. The major problem with Gesell and Ilg's interesting and intrinsically pleasing observations is that they are based on a form of data analysis which Gesell and Ilg themselves admit is "clinical". They were not interested in developmental mathematical averages, useful as they may seem today, nor did they report statistical data of any kind. Moreover, their Ss (often as few as 50 in number) were not a representative

sample of American children in general, drawn as they were from families of high socioeconomic status; their Ss, in addition, generally demonstrated high average or superior intelligence and most had attended nursery school in their early years.

The general trend, however, in Gesell and Ilg's descriptions seems valid. Children apparently progress along two major dimensions in their friendships in middle childhood: from twosomes to increasingly larger groups and from heterogeneity of sex and age to a preference for same sex and aged companions. These suggestions have led Potashin (1972) to differentiate four further stages in peer relations beyond Parten's preschool stages; these are "neighborhood gang", "self-propelled club", "clique" and "true friendship" described below.

The present study combined all of these stages and attempted to determine, firstly, whether there is, in fact, a progression from stage to stage with age or a progression of particular peer group patterns and, secondly, whether this progression can be accurately measured by means of a picture test which would be applicable to a wide range of children at different ages. The proposed stages[1] in voluntary interaction were:

1) onlooker or solitary play at age 2 (when the child is still entirely egocentric and has not learned the rules of social interaction); child plays alone or watches another child playing from a distance;

[1]Ages cited are those at which peer group is thought first to appear with any consistency.

2) parallel play at age 3; 2 children play at the same activity and in the same area but do not interact;

3) associative play at age 4 (when children have learned some basic rules for interactions); two children take turns or participate in other associative behavior;[2]

4) cooperative play at age 5 (when most basic rules for interactions have been acquired; 2 children cooperate and play together;

5) "neighborhood gang" at age 6; a spontaneous conglomerate of all ages and both sexes in a large group with very little organization;

6) "self-propelled club" at age 8 to 10; a small group (5 or 6 children), homogeneous with respect to age and sex;

7) "clique" at age 10 to 14; a larger more stable group than (6), which demands conformity and constant interaction;

8) true friendship after age 9 but only for some children; a very stable emotional tie.[2]

It was not assumed that an individual at a specific age would always exhibit behavior characteristic of this stage. Instead it was recognized that a child would prefer different forms of peer groups for different play activities and, moreover, that he would always show some evidence of all the lower stages. The only assumption was that an older child's pattern of responses on the picture test would be different from that of a younger child and if results indeed confirmed this, it was thought that the arbitrary and misleading age equivalents for the various stages could be dispensed with in favor of age-patterns for the purpose

[2]These stages were rejected as they could not be appropriately illustrated.

of individual evaluations, provided the first portion of the study, the theoretical validation, was successful.

In addition to these aims of the study, one other hypothesis was tested. Campbell (1964) has suggested that there are three factors other than age which must be controlled for in peer relation studies, namely, social class (which was controlled in the present study), sex and intelligence. In several studies on suggestibility and conformity to the peer group (e.g. Utech and Hoving, 1969) as well as on preschool peer interactions (e.g. Smith and Connolly, 1971), sex differences were not evident. A pilot study (Nelson, 1973) which utilized a shorter version of the picture test used in the present study found sex to have an equivocal effect on the picture test scores so the sex differentiation was repeated in the present study. The issue about the effect of intelligence on peer relations has also been controversial; in some studies it was a significant factor (e.g. Parten, 1932) and in others it was not (e.g. Terman, 1925). The variable, intelligence, was incorporated into the pilot study (Nelson, 1973) and found to have little effect on the particular peer group categories which were employed in the present study and it was not included in this study.

The major aims of this study were to validate the stage theory for children older than preschoolers and establish whether or not a picture test could be devised

to yield similar patterns of peer groups as obtained through direct observation. The independent variables were age (of which there were four levels ranging from 6 to 12 years), and sex, with two separate dependent measures: direct observation scores and peer relation picture test scores. It should be noted that use of the picture test assumed Ss were aware of those peer groups which are characteristic of them.

Method

Part I Validation of the Stage Theory.

Subjects Ss were 65 children (33 females and 32 males) at three after-school day care programs[3] in the large urban area of Vancouver, British Columbia. The three programs each had an enrollment of between 15 and 40 children and offered supervised free play for elementary school children in one large room with no separation on the basis of age or sex. All three programs operated out of schools but were independently financed. The children attended the centers from 3:00 p.m. until 6:00 p.m. and were predominantly children of working mothers or single parents. The sample was composed of approximately an equal number of upper middle, middle, and lower middle class children. Ss were divided into groups of 18 each (½ male M and ½ female F) according to age. The four groups, 6 year olds (A_6), 8 year olds (A_8), 10 year olds (A_{10}) and 12 year olds (A_{12}), were composed of randomly selected children whose birthdays were within 3 months of the first date of observation. Group A_{12} contained only 11 Ss (6 female, 5 male) as very few twelve year olds were enrolled in the programs. Mean ages of the groups are presented in Table I.

[3]Sincere gratitude is extended to parents and supervisors of children in Point Grey Out-of-School Day Care II, University Hill Out-of-school Day Care and Dickens Latchkey program (through Cedar Cottage) for their kind permission to conduct this study in their facilities.

TABLE I

Mean Ages at Testing by Group (to nearest month)

	M	F
A_6	5 - 11	6 - 1
A_8	8 - 1	8 - 0
A_{10}	10 - 0	10 - 0
A_{12}	12 - 0	12 - 0

Procedure Each child in each group was unobtrusively observed for four half-hour periods over several weeks by one of three observers. The entire study required five months to conduct. The time of day and day of the week was randomized for the periods of observation for each child. Observers used stop watches to record the duration of time (in minutes and seconds) spent by each child in solitary play (Sol), parallel play (Par), co-operative play (Coop), neighborhood gang (Gang), self-propelled club (Club), and clique (Cliq) during each half-hour period. Observers were "blind" in the sense that they were not given either the names of the peer groups or the age at which they are thought to occur spontaneously in the normal child. See Appendix "A" for category operational definitions given to observers. A "habituation" period of one full week in each center served the dual purpose of desensitizing the children to the observers' presence and enabling the observers to learn the children's names, since use of name tags was thought likely to disturb the daily routine and reduce observers' unobtrusiveness. Observers were also provided with the ages of all the children in the program in order that peer group discriminations could be made (e.g. between the Gang and Club groups where age is a critical factor). Inter-observer reliability checks were made by comparing recorded durations for each type of peer group by each observer over 12 half hour

sessions of simultaneous observation of the same child. Two of these took place near the beginning and two near the end of observation in each of the three centers. Overall inter-observer reliability was .994. By category, inter-observer reliabilities were .998 (Sol), .972 (Par), .988 (Coop), .997 (Gang), .997 (Cliq), and .995 (other). Observer's identity was randomized as much as possible over age and sex group and over each child's four observation sessions although two observers were available to participate at only one of the locations. Observers were also instructed that recorded activity must be voluntary on the part of the child; interactions with or interactions directed by an adult supervisor were to be recorded under the category of "other". This category also included temporary absences from the room due to bathroom visits, etc. and physically aggressive interactions (of which only one episode occurred). It was decided that any child whose recorded interactions included 50% or more total time in the "other" category (i.e. 1 hour or less total observation of peer contact) would not be retained as a S. Since the programs provided almost completely free play time with few structured activities, however, no child was eliminated on this basis. After all of the observations were completed, the duration of time spent by each child in the separate categories was summed over the 4 observation periods and percentage scores,

(e.g.

$$\frac{\text{total time spent in Coop group}}{\text{2 hours—duration spent in "other" category}} \times 100)$$

were tabulated for each of the 6 types of peer groups. These individual scores were then grouped according to the age and sex of the child. The design of the validation study was therefore a 4 (between-age) X 2 (between-sex) X 6 (within-category of peer group) design with 9 Ss per cell, except in A_{12} where the male and female cells included 5 and 6 Ss respectively.

Part II Peer Relation Picture Test.

Apparatus and Materials. Twenty sets of 6 picture cards were used, each set containing a pictorial representation of solitary play, parallel play, cooperative play, neighborhood "gang", self-propelled club, and clique. The activities depicted in the sets are reported in Table II. The cards measured 9" x 11", were made of white cardboard, and were printed in black and green felt pen. All figures were of the stickman type with no adornments which could indicate sex (in order that the cards were applicable to both sexes without any alterations). The solitary play card in each set consisted of one green-colored stickman; background and other necessary material (e.g. volleyball) was always colored black. This same green stickman was duplicated in every picture of the set, without changes in position, location on the card, or amount of equipment

TABLE II

Activities Depicted in Picture Card Sets

A	Dancing	K	Basketball
B	Story-telling	L	Building with Blocks
C	Baseball	M	Modelling Clay
D	Walking	N	Skiing
E	Volleyball	O	Hopscotch
F	Eating Lunch	P	Painting
G	Marbles	Q	Dodgeball
H	Singing	R	Bicycling
I	Swimming	S	Skating
J	Snowman-building	T	Drawing

present. Picture 2 (parallel play) of each set consisted of the green stickman and a black stickman of identical size engaged in the same activity but separated by a minimum of 5" and without apparent eye-contact. Picture 3 (cooperative play) showed the green stickman and one black identically-sized stickman engaged in the same activity together (physical contact was usually involved), using the same material. Pictures 4, 5, and 6 differed only in the number and size of additional stickmen. The neighborhood gang (Picture 4) was represented by the green colored child and 11 black colored children, of which one was 1/3 larger and two were 1/3 smaller. Picture 5 (self-propelled club) included the green stickman and four others of equal size playing together; and Picture 6 (clique) included those five and four more of equal size. The size of the stickmen was meant to indicate age to S and was, therefore, kept very exact. See Appendix "B" for an illustration of one complete set of pictures.

Procedure. The 65 Ss were administered the above-described picture test after the observational portion of the study was completed. Most of the Ss were tested during after-school day-care hours in a small private room at the school; the remainder were tested at their homes on weekends or during the evening. The instructions given them were: "I am a university student and I am writing a report about children at different ages. I hope you don't

mind helping me. This isn't a test to find out how smart you are or anything like that because whatever you answer is right. You cannot be wrong. All I want you to do is look at some pictures. (The first set was spread out at this point). I have 20 sets of pictures and there are six pictures in each set. Look at these six pictures. All of these people are children and they are all doing the same thing, aren't they? They are---(dancing, painting, etc.) You will see that there is one green---(boy or girl depending on sex of S) in every picture. (All six green stickmen were pointed to). That is you. Now tell me, when you---(dance, paint, etc.), which picture looks most like you? Remember that the other children in the pictures are friends of yours, not your brothers or sisters". Ss indicated their choices by pointing. If they were unsure or undecided about any set, they were instructed to choose the picture that they would usually or probably be in if they were engaged in that particular activity. The twenty sets were presented in random order and the six pictures in each set were also arranged randomly in a two-row, three-column formation on a small table directly in front of S. Each S was presented with all 20 sets (all 120 pictures) and the number value of his picture choice as well as the letter of the set was recorded. His scores were then tabulated according to his age and sex, after having been transformed into percentage scores (e.g.

$$\frac{\text{Number of responses to Sol cards}}{\text{20 possible}} \times 100)$$

such that he had six percentage scores for the test. Each S's results consisted, therefore, of the percentage scores derived from observation and percentage scores derived from the picture test.

Results

A 4x2x6 analysis of variance was applied to both sets of data: the observation scores and the test scores. The results are summarized in Tables III and IV. Since percentage scores were employed, no between effects were evident. In other words, the fact that each S's observation scores and test scores over the six categories always totalled 100% eliminated all between variance. Both sets of data showed an interaction between age and category of peer group ($F=16.34$ $df=15, 285$ for observation scores and $F=7.88$ $df=15, 285$ for test scores). Sex did not interact with any of the variables in either of the sets of the data.

The age x category means (disregarding sex) are presented graphically in Figure I (for observation scores) and Figure II (for test scores). Both sets of scores yielded the same trends: Sol is most popular at age 6 and gradually decreases to age 12; Par is relatively low at age 6 and decreases somewhat further in the other three age groups; Coop increases very slightly to age 8 and then decreases with age; Gang also increases and then decreases; and Club and Clig consistently increase with age. In other words, the peer groups which are hypothesized to be characteristic of younger children generally decrease in the total percentage of interaction time devoted to them while those which are thought to be characteristic

TABLE III

Analysis of Variance for Observation Scores

(Age X Sex X Category)

Source	df	ss	ms	F	prob.
C	5	20219.89	4043.98	38.53	$<.01$
AXC	15	25728.93	1715.26	16.34	$<.01$
SXC	5	502.16	100.43	0.96	$>.01$
AXSXC	15	714.63	47.64	0.45	$>.01$
error	285	29916.25	104.97		

TABLE IV

Analysis of Variance for Test Scores

(Age X Sex X Category)

Source	df	ss	ms	F	prob.
C	5	18773.60	3754.72	30.20	$<.01$
AXC	15	14691.36	979.42	7.88	$<.01$
SXC	5	302.11	60.42	2.43	$>.01$
AXSXC	15	1199.08	79.94	0.64	$>.01$
error	285	35431.85	124.32		

FIGURE I

Age X Category Interaction for Observation Scores

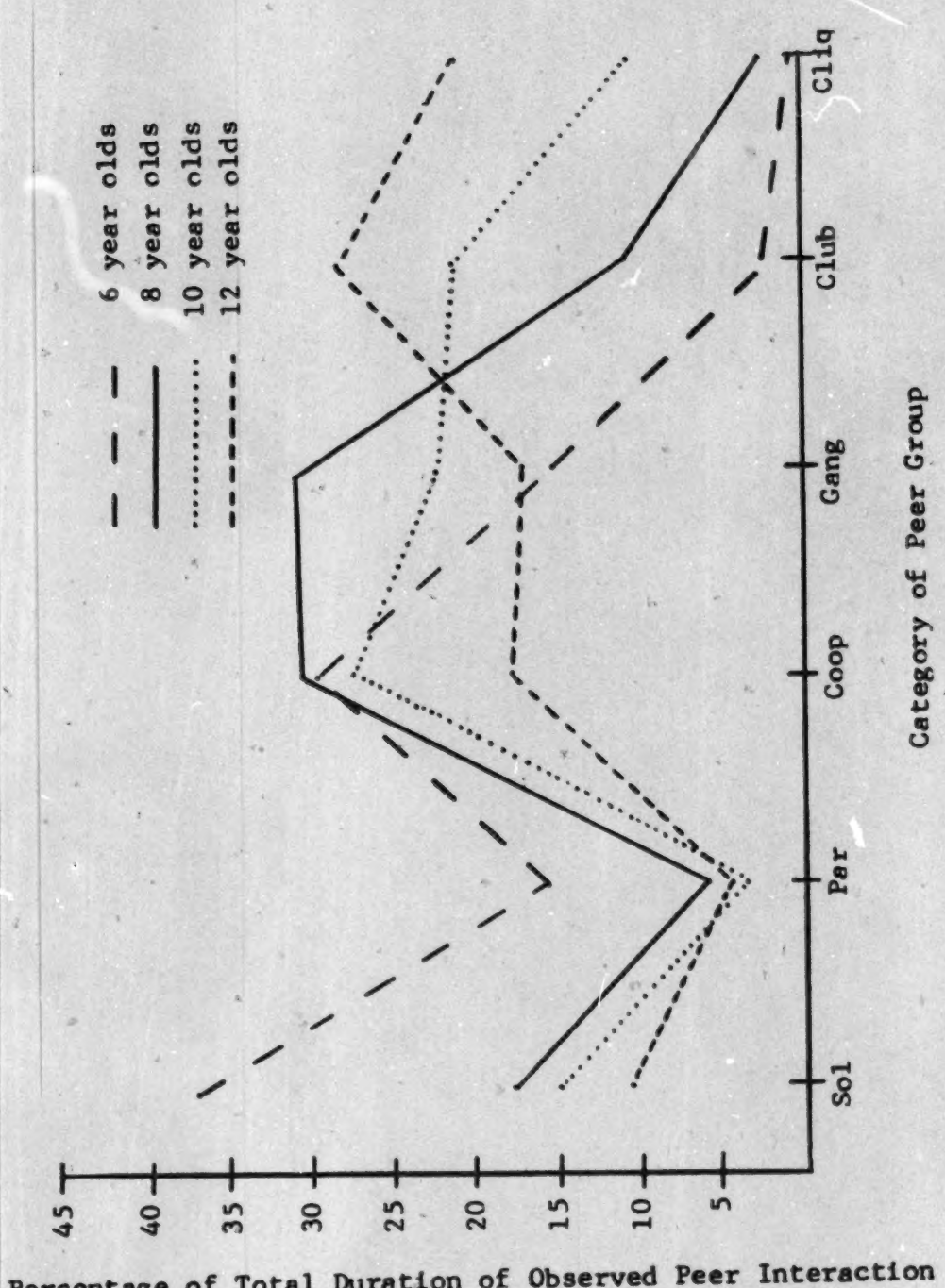
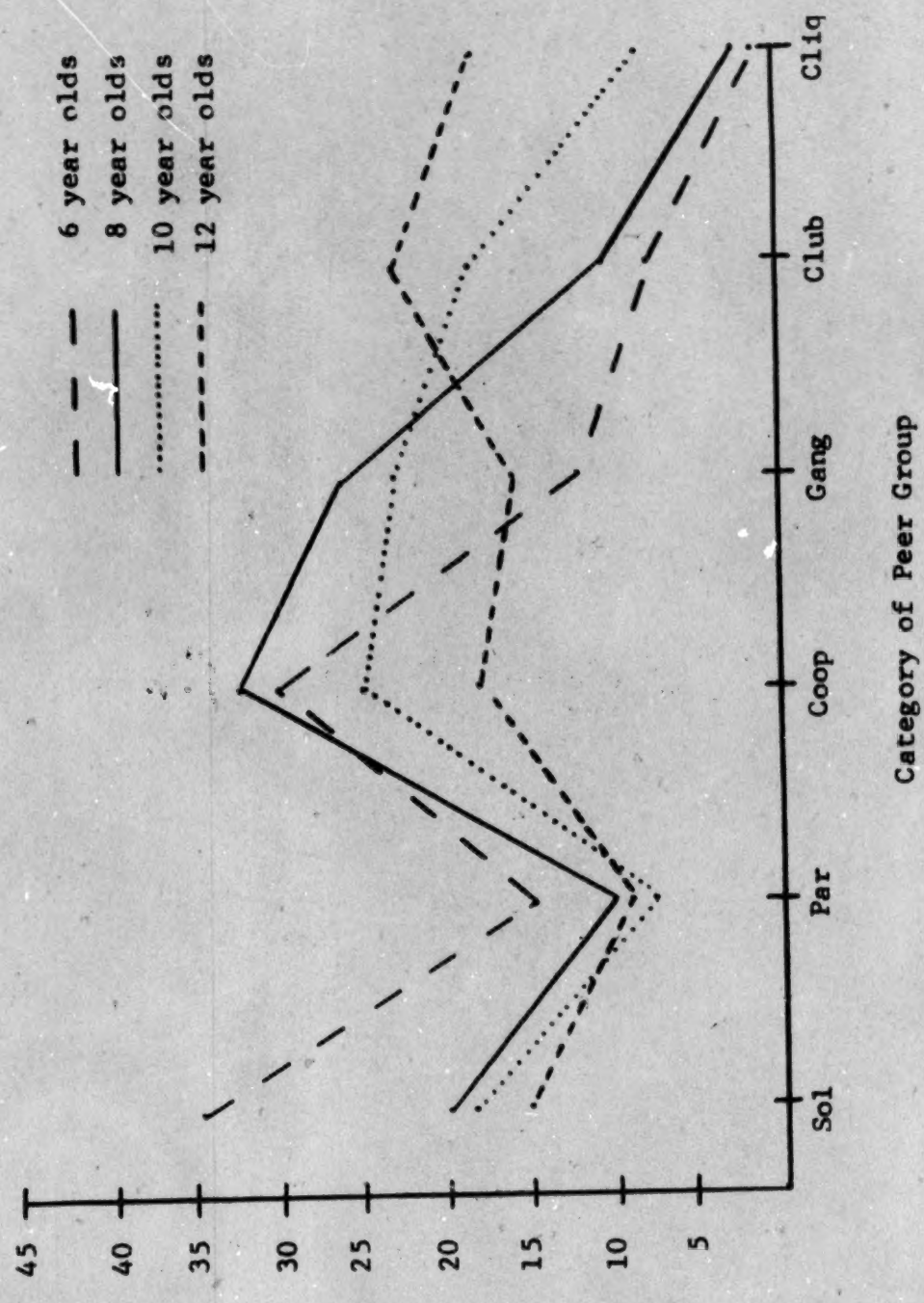


FIGURE II

Age X Category Interaction for Test Scores



of older children generally increase with age.

In terms of overall popularity of peer groups (as illustrated by overall category means presented in Figure III), it is evident that some types of peer groups (e.g. Coop) are more likely to be engaged in than others (e.g. Par or Cliq) within the six year age spread tested.

A series of Scheffés (Scheffé, 1953) was also applied to the two sets of data. Table V presents those Scheffés which compared two observation score category means for a particular age group, with the corresponding test score Scheffé value in brackets. Error mean squares of 102.08 (for observation scores) and 121.09 (for test scores), based on two-way age X category analyses, were employed in the computation of the Scheffés. It may be noted that the observation score data yielded several more significant differences than did the test score data and, since it is with actual peer group interaction that the present study is concerned, only the observation data results will be mentioned here. A_6 showed significant differences between the percentage of time spent in Sol and Par; between Sol and Gang; between Sol and Cliq; between Par and Cliq; between Coop and the three other categories of Gang and Coop and Club; between Coop and Cliq and between Gang and Cliq. In other words, in general, six year olds spent approximately the same amount of time in solitary play and significantly less time in any

FIGURE III

Observation and Test Score Means over Category

TABLE V

Within Scheffé Comparisons*

Category	A_6	A_8	A_{10}	A_{12}
Sol, Par	*6.25 (5.37*)	3.55 (2.88)	3.23 (3.03)	1.50 (1.31)
Sol, Coop	2.20 (1.44)	-3.63 (-3.41)	-3.87 (-1.74)	-1.55 (-0.59)
Sol, Gang	*6.53 (6.21*)	-4.01 (-1.59)	-2.31 (-1.14)	-1.46 (-0.20)
Sol, Club	*10.25 (7.42*)	2.10 (2.72)	-2.01 (0.08)	-4.08 (-1.60)
Sol, Cliq	*10.96 (9.08*)	*4.68 (4.84*)	1.28 (2.95)	-2.32 (-0.56)
Par, Coop	-4.05 (-3.94)	*-7.18 (-6.28*)	*-7.10 (-4.77*)	-3.06 (-1.91)
Par, Gang	0.29 (0.83)	*-7.55 (-4.47*)	*-5.54 (-4.16)	-2.97 (-1.52)
Par, Club	4.01 (2.04)	-1.46 (-0.15)	*-5.25 (-2.95)	*-5.59 (-2.91)
Par, Cliq	*4.71 (3.71)	1.15 (1.97)	-1.95 (-0.08)	-3.82 (-1.87)
Coop, Gang	*4.34 (4.77*)	-0.38 (1.82)	1.56 (0.61)	0.09 (0.39)
Coop, Club	*8.06 (5.98*)	*5.73 (6.13*)	1.86 (1.82)	-2.53 (-1.01)
Coop, Cliq	*8.76 (7.64*)	*8.31 (8.25*)	*5.15 (4.69*)	-0.76 (0.04)
Gang, Club	3.72 (1.21)	*6.10 (4.31*)	0.30 (1.21)	-2.62 (-1.40)
Gang, Cliq	*4.43 (2.88)	*8.69 (6.43*)	3.59 (4.09)	-0.85 (-0.36)
Club, Cliq	0.70 (1.67)	2.58 (2.12)	3.29 (2.88)	1.77 (1.04)

* Asterisks indicate differences which are significant at the .01 level.

other peer group category. A_8 differed significantly in the percentage of time spent in Sol as opposed to Cliq; Par as opposed to both Coop and Gang; Coop as opposed to both Club and Cliq; and Gang as opposed to both Club and Cliq. Eight-year-olds therefore can be seen to have devoted about the same amount of time to solitary play, cooperative play, and neighborhood gang with significantly less emphasis, in general, on the other three peer groups. A_{10}, on the other hand, evidenced significant differences between Par and the three categories, Coop, Gang, and Club; and between Coop and Cliq, such that ten-year-olds spent about an equal percentage of time in cooperative play, neighborhood gang, and self-propelled club and a significantly lower percentage of time in parallel play with the other two categories somewhere in between. A_{12} spent roughly an equal percentage of interaction time in all categories of peer group with the only significant difference occurring between Par and Club.

Another series of Scheffés was applied to pairs of age groups within each category. Again, more significant differences were found in the observation data and only these will be noted here, but Table VI also presents in brackets Scheffé values associated with test score data. Within the Sol category, significant differences were found between the 6-year-old percentage score mean and the means associated with all other age groups such that it may be

TABLE VI

Between Scheffé Comparisons*

	Age 6, 8	6, 10	6, 12	8, 10	8, 12	10, 12
Sol	*4.82 (3.02)	*5.74 (3.30)	*5.81 (3.45)	0.92 (0.28)	1.60 (0.82)	0.81 (0.57)
Par	*6.16 (2.92)	*7.74 (3.95*)	*6.32 (2.65)	1.58 (1.02)	0.94 (0.10)	-0.44 (-0.79)
Coop	-0.22 (0.76)	0.51 (1.10)	2.73 (2.44)	0.73 (1.86)	2.92 (3.10)	2.29 (1.48)
Gang	*-3.92 (-3.75*)	-1.74 (-2.92)	-0.47 (-1.03)	2.18 (0.82)	2.94 (2.23)	1.04 (1.52)
Club	*-5.90 (0.81)	*-12.89 (-3.53*)	*-10.94 (-4.37*)	*-6.99 (-2.71)	*-7.32 (-3.66)	-3.01 (-1.29)
Cliq	-1.41 (-0.44)	*-6.12 (-3.41)	*-10.90 (-7.73*)	*-4.72 (-2.97)	*-9.66 (-7.34*)	*-5.56 (-4.75*)

* Asterisks indicate differences which are significant at the .01 level.

said that 6-year-olds spent significantly more time in this peer group category than 8-year-olds, 10-year-olds, or 12-year-olds. Par showed exactly the same pattern, being most important for 6-year-olds. Coop, on the other hand, yielded no significant between-age-group differences. In other words, this category was roughly equally important to all age groups. Gang was a type of peer group in which 8-year-olds interacted to a significantly greater extent than 6-year-olds, although there were no other significant differences. On the other hand, Scheffé values for Club indicated that there was a significant increase with age in group means for this category, even between adjacent age groups, except between 10 and 12-year-olds where the increase was evident but not significant. Values for the final category, Cliq, also demonstrated a definite and significant increase with age, even between adjacent age groups, except between 6 and 8-year-olds where the increase again was evident but insignificant.

The individual Ss' observation scores and test percentage scores were correlated by means of the Pearson Product Moment Formula. The resulting r of .81 (df=389) is significant at the .01 level. In other words roughly 66% of the variance associated with the test data is also associated with the observation scores. Correlations were also computed by category and the following r's were obtained: .75 for Sol (df=64, $p < .01$); .58 for Par

(df=64, $p < .01$); .74 for Coop (df=64, $p < .01$); .81 for Gang (df=64, $p < .01$); .67 for Club (df=64, $p < .01$); and .79 for Cliq, (df=64, $p < .01$).

A two-way analysis of variance was also computed in order to determine whether or not the twenty sets of pictures were roughly equivalent in the overall pattern of responses over age groups to the particular category cards. For this purpose, a factorial analysis was employed by tabulating frequencies of Ss responding to particular category cards in pairs of picture sets. In other words, the twenty sets were first paired: A with B, C with D, etc., such that in most cases each pair contained a sedentary and an active activity. This arbitrary pairing seemed likely to ensure a larger error term than a random pairing. Frequencies of Ss responding to Sol cards in each pair, Par cards in each pair, etc. were then tabulated. The analysis, therefore, was category X pair with cell n's of 2. (See Table VII). The important statistic was the interaction of category with set, which was found to have an F value of 0.38 (df=59, 46) which was not significant at the .01 level. In other words, each pair of picture sets had roughly the same frequency pattern of responses over categories.

TABLE VII

Analysis of Variance for Frequency in Categories of Test Responses by Paired Picture Card Set

Source	df	ss	ms	F
Total	119	4056.67		
Category	5	2716.17	543.23	27.80
Pair	9	0	-	-
Pair X Category	59	441.50	7.48	0.38
Error	46	899.00	19.54	

Discussion

In general, the results parallel Gesell and Ilg (1946) and Gesell, Ilg and Ames' (1956) observations, but indicate much more complex patterning of peer group interactions than might have been expected. In only one age group (6 yr. olds) did one extremely dominant peer group prevail; 6-year-olds spent more than 35% of their total interaction time in solitary play. If 25% is taken as a criterion for dominance of peer group, however, 6-year-olds show two dominant preferences, solitary and cooperative play; 8-year-olds show two dominant preferences, cooperative and neighborhood gang; 10-year-olds show only one, cooperative play; and 12-year-olds show only a preference for self-propelled club. In other words, it is impossible to describe one particular type of peer group as characteristic of any particular age group, even in the present study where the age groups differed by two years, and a clear progression of stages of peer relations cannot be claimed on the basis of this research to exist during childhood.

On the other hand, Gesell and Ilg's suggestion that the trend through middle and late childhood is towards increasing size and homogeneity of age and sex in peer groups with increasing age was supported in the present study, and this in and of itself may be claimed to be evidence in support of a form of "stage" theory since Gesell and Ilg (1946) admit that "the child at a given stage may

show a strong resemblance to what he was at an earlier stage". (p.59) Moreover, a number of further observations were made. For example, the sex differences noted in amount of "clique" behavior between males and females (Gesell, Ilg and Ames, 1956) were not present in this sample. It is possible that "gang" or "clique" formation in females is not as socially taboo today as it was when the earlier study was conducted. Nor were there significant sex differences in any other category of peer group, a finding similar to Green's results (1933) with preschoolers and Smith's (1973) observations with older children and young adults.

The major finding, and one which will likely be important in later research, is the change of peer group patterns over age. While noted in preschool children, systematic analysis in terms of group size has rarely been attempted with older children. For example, as early as 1933, Green reported a regular increase of the "friendship index" (frequency of cooperative play) with age in two to five-year-olds. Clark, Wyon and Richards' (1969) sociability score (mean number of companions per observation interval) also increases in this age group, as does Blurton Jones' (1972) frequency of social items (e.g. talk, smile, play with child, etc.). The only relevant observations that have been made on older children, (Smith, 1973) however, are that children tend to break down from larger groups

into twosomes more than adults, younger children have less stable and less predictable interaction patterns than older children, and egocentrism apparently diminishes with increasing age. It appears that some of the further complexity surrounding the peer groups in middle and late childhood may have been approached by the present study, although no particular conclusions can be made on the basis of knowledge of any individual child's peer group interaction patterns.

On the other hand, the possible usefulness of the picture test after further refinements in lieu of direct observation has been suggested for future research and possible diagnostic or remedial purposes. The correlation between the two dependent measures was .81, and it may be noted that the picture test requires only about five to ten minutes to administer and there is a good proportion of common variance between the two measures. In actuality, the degree of correlation is not surprising inasmuch as most children would be assumed to be aware of those peer groups characteristic of them in a particular activity. The twenty picture sets, moreover, apparently sampled a broad enough range of activities, both sedentary and active, to be applicable to most children and both sexes.

Overall, it appears that the picture test would be a fruitful tool for the purposes of future research. One

such line is suggested by Smith and Connolly (1972) who differentially weighted (as 1, 2 and 3) Parten's categories of solitary, parallel, and cooperative (group) play for preschoolers, finding a factor they named "social maturity". All group play behaviors loaded on one side, self on the other, and parallel play with near zero loadings. Both age and nursery experience had equal loadings on this factor suggesting that socially immature children may be aided by opportunities for interactional experiences. Emotionally-abnormal populations of children (e.g. problem children with extreme separation anxiety) have been found to have reduced unsatisfactory interactions with peers, in some ways similar to younger normal children (Leach, 1972). More subtle differences from normal children (e.g. in terms of sex differences) may be found with retarded children (Schlottmann and Anderson, 1973). In the light of these findings, it seems possible that a form of the picture test might eventually be used to grossly differentiate abnormal from normal children for the purposes either of diagnosis or remediation, since increased experience in peer groups is likely to increase facility with them.

There are a number of problems inherent in such an attempt, however, apart from the obvious ones of refining the test and ensuring representativeness of the sample. Firstly, it must again be noted that even the results for the "normal" children included in this sample are complex

and highly variable. Secondly, the use of percentage scores in the current study actually may have inflated differences between categories and between age groups since the total amount of interaction varied from slightly over one hour to almost two full hours per child, due to the inclusion of the "other" category. Conversion into percentage scores was valuable for comparison with test scores, however, and for establishing the proportion of interaction time devoted to a particular peer group. Other studies with preschoolers (e.g. Blurton Jones, 1972 and Clark, Wyon and Richards, 1969) using time-sampling techniques found that "solitary" play scores did not vary with age although "sociability" scores did, and it is possible that this may be true for older Ss as well. In addition, the current study did not take into account such further dependent measures as depth of friendship, number of different companions, etc. (e.g. Green, 1933). Nor, apparently, were enough categories considered; "true" friendship, for example, was considered as "cooperative play" even if it is likely to be a different phenomenon from a casual contact between two children. Birth order of the child has also been suggested to be of some importance in children's peer interactions (Blurton Jones, 1972), as has the situation in which the children meet, for example, variables such as presence or absence of toys (Johnson, 1935), occupation chosen by the child (Parten

1933), etc., all of which were neglected in the present study.

A further problem in the design of the present research was the decision to employ continuous recording. If further naturalistic observation is attempted, a time-sampling procedure would likely be more advantageous to use in light of mechanical recording difficulties with continuous observation. In addition, the obtained inter-observer reliability coefficient of .99 is likely to have been inflated since correlations were based on total durations in categories and did not take into account whether or not both observers were recording a particular interaction. Inter-observer agreement in other studies of children's social activities have often approximated .9 or above, however, (e.g. Clark, Wyon and Richards, 1969) and it is therefore likely that a sizeable inter-observer reliability can be expected in future research.

Despite these omissions and minor defects, the present study has at least opened up a new and interesting area for future research and developed a fairly simple measurement device. This preliminary research has supported a form of stage theory in children's peer relations and may in future lead to useful diagnostic and remedial advances in children's social maturity, should gross deviations from normal age patterns be found to be symptomatic of emotional or other problems.

References

Blurton Jones, N. Categories of Child-Child interaction. In N. Blurton Jones (ed.) Ethological Studies of Child Behaviour. London: Cambridge University Press, 1972, p.97-127.

Campbell, J. Peer relations in childhood. In M. Hoffman and L. Hoffman (eds.) Review of Child Development Research. New York: Russell Sage Foundation, 1964, 289-322.

Clark, A., Wyon, S. and Richards, M. Free-play in nursery school children. Journal of Child Psychology, Psychiatry and Allied Disciplines, 1969, 10, 205-216.

Costanzo, P. and Shaw, M. Conformity as a function of age level. Child Development, 1966, 37(4), 967-974.

Einhorn, J. A test of Piaget's theory of moral development. Canadian Journal of Behavioural Science, 1971, 3(1), 102-113.

Elkin, F. The Child and Society: The Process of Socialization. New York, N.Y.: Random House, 1960.

Gesell, A. The Mental Growth of the Pre-School Child. New York: MacMillan, 1925.

Gesell, A. and Ilg, F. The Child from Five to Ten. New York: Harper and Bros., 1946.

Gesell, A., Ilg, F. and Ames, L. Youth: The Years from Ten to Sixteen. New York: Harper and Row, 1956.

Green, E. Friendships and quarrels among preschool children. Child Development, 1933, 4, 237-252.

Harlow, H. and Harlow, M. The affectional systems. In A. Schrier, H. Harlow and F. Stollnitz (eds). Behavior of Nonhuman Primates: Modern Research Trends, Vol. 2, New York: Academic Press, 1965, 287-334.

Hartup, W. Peer relations. In T. Spencer and N. Kass (eds.) Perspectives in Child Psychology. New York: McGraw-Hill, 1970, 261-294.

Haskett, G. Modification of peer preferences of 1st grade children. Developmental Psychology, 1971, 4(3) 429-433.

Johnson, M. The effect on behaviour of variation in the amount of play equipment. Child Development, 1935, 6, 56-68.

Leach, G. A comparison of the social behaviour of some normal and problem children. In N. Blurton Jones (ed.) Ethological Studies of Child Behaviour. London: Cambridge University Press, 1972, 249-281.

Lippitt, R. and White, R. An experimental study of leadership and group life. In T. Newcomb and E. Hartley (eds.) Readings in Social Psychology. New York: Holt, 1947.

McConnell, T. Suggestibility in Children as a function of chronological age. Journal of Abnormal and Social Psychology, 1963, 67(3), 286-289.

Moreno, J. L. Who Shall Survive? Washington, D.C. : Nervous and Mental Disease Publishing Co., 1934.

Mussen, P., Conger, J., and Kagan, J. Child Development and Personality, 3rd edition. New York: Harper and Row, 1969.

Nelson, J. The Effect of Sex and Age on Picture Choice in a Children's Peer Relation Stage Test, 1973 (unpublished research).

Parten, M. Social participation among pre-school children. Journal of Abnormal and Social Psychology, 1932, 27, 243-269.

Parten, M. Social play among preschool children. Journal of Abnormal and Social Psychology, 1933, 28, 136-147.

Piaget, J. The Moral Judgment of the Child. Glencoe, Ill.: Free Press, 1948.

Potashin, R. Sociometric study of children's friendships. Sociometry, 1946, 9, 48-70.

Potashin, R. Unpublished lecture material, University of British Columbia, 1971-1972.

Rosen, B. Conflicting group membership: A study of parent-peer group cross-pressures. American Sociological Review, 1955, 20, 155-161

Scheffé, H. A method for judging all contrasts in the analysis of variance. Biometrika, 1953, 40, 87-104, cited by G. Ferguson Statistical Analysis in Psychology and Education, 3rd edition. New York: McGraw-Hill, 1971.

Schlottmann, R. and Anderson, V. Social and play behavior of children with Down's Syndrome in sexually homogeneous and heterogeneous dyads. Psychological Reports, 1973, 33(2), 595-600.

Sherif, M.: Harvey, O.; White, B.; Hood, W.; and Sherif, C. Intergroup Conflict and Cooperation: The Robbers Cave Experiment. Norman: University of Oklahoma Press, 1961.

Smith, H. Some developmental interpersonal dynamics through childhood. American Sociological Review, 1973, 38(5), 543-552.

Smith, P. and Connolly, K. Play and social interactions. In N. Blurton Jones (ed.) Ethological Studies of Child Behaviour. London: Cambridge University Press, 1972, p. 65-95.

Terman, L. Genetic Studies of Genius: Vol. 1 Mental and Physical Traits of a Thousand Gifted Children. Stanford: Stanford University Press, 1925.

Utech, D. and Hoving, K. Parents and peers as competing influences in the decisions of children of differing ages. The Journal of Social Psychology, 1969, 78, 267-274.

Withey, S.; Foster, B.; and Billingsley, P. A Study of Boys Becoming Adolescents. Ann Arbor: Institute of Social Research, University of Michigan, 1960.

APPENDIX "A"

Category Definitions Given to Observers.

Category 1 --- (Sol) Child plays alone at a distance of at least 5 feet from any other child. No apparent interaction (verbal or otherwise), or child is watching another child play at a distance of at least 5 feet. No apparent interaction.

Category 2 --- (Par) Child plays alone near (within 5 feet of) another child. Both children are engaged in the same activity. No apparent interaction.

Category 3 --- (Coop) Child plays with 1 other child of either sex (within 5 feet). Verbal or tactual interaction and/or eye contact.

Category 4 --- (Gang) Child plays with several other children (more than one) of varied ages and/or both sexes. Verbal, tactual, or eye contact.

Category 5 --- (Club) Child plays with several other children (more than one, no more than 4) of similar* ages and the same sex. Interaction.

Category 6 --- (Cliq) Child plays with at least 5 other children of similar ages and the same sex. Verbal, tactual or eye contact.

Category --- (other) Child interacts with adult and/or other children at adult's suggestion. Also included are visits to the bathroom, getting a drink, etc. when observation is impossible.

*"Similar ages" to mean within two years of child's own age.

Sample of a Complete Set of Pictures used in Picture Test
(Set L - Building with Blocks)

(Note : Figure with shaded head represents green figure appearing in actual picture sets)